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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/380,583 09/08/99 NAGATA

MM91/1024

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S P7331-9002

EXAMINER

ART UNIT 4100, PAPER NUMBER

DATE MAILED:

10/24/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
**09/380,583**

Applicant(s)  
**Shinichi Nagata et al.**

Examiner  
**T. R. Sundaram**

Group Art Unit  
**2858**



☒ Responsive to communication(s) filed on Nov 5, 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claim

☒ Claim(s) 1-12 is/are pending in the applicat

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-12 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☒ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Drawings*

2. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated, as is clear from the discussions on pages 2-3 and 10 of the specification. See MPEP § 608.02(g).

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *King*, in view of *Osaki et al.*, *Heikkila* and *Todoroki et al.*

Regarding claim 1, *King* discloses an orientation detection apparatus/instrument (Figs. 1 and 2) that substantially includes most of the structural elements recited in claim 1. Specifically,

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it discloses: a dielectric resonator (11, Figs. 3A, 3B and 3C) in contact with the sample (9, Fig.1) under test (Fig. 9); a microwave generator (Fig. 1 and column 7, lines 18 ff) for generating an electric field and resonant coupling (column 2, lines 38-58); a detector (Fig. 1) for detecting the reflection energy; and processing the data for obtaining the dielectric anisotropy of the sample under test.

*King* does not expressly disclose a rotation mechanism for rotating the sample under test or the resonator. Also, it does not expressly consider the microwave energy transmitted through the sample, albeit it is noted that line 8 of the claim recites transmitted energy only in the **alternative**; that is, the recitation is transmission energy **or** reflection energy. Moreover, although the apparatus of *King* is not expressly designed for measuring orientation, the disclosure specifically mentions determination of fiber orientation (column 4, lines 41-49) as one possible application.

Rotating the sample or the resonator is widely practiced in the art, as is the use of a transmission mode of testing, as exemplified by *Osaki et al.*, *Heikkila* and *Todoroki et al.* *Osaki et al.* discloses a method of determining orientation or dielectric characteristics of thin sheet materials in which both the sheet material under test (3) and the microwave unit (1 and 2) can be rotated (respectively, Figs. 1 and 3). *Heikkila* discloses a method of determining grain direction in wood using both transmitted and reflected microwave energy (respectively Figs. 2 and 3). *Todoroki et al.* discloses a method of determining fiber orientation in paper through the use of a polarized laser beam (another form of radiation than microwaves, albeit also electromagnetic

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radiation), in which the sample table (2a, Figs. 2 and 3), containing the sample sheet (1a) is rotated with respect to the beam.

*King, Osaki et al., Heikkila and Todoroki et al.* are analogous art, with all of them being concerned with the measurement of the dielectric properties of sheet-like materials.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the invention of *King*, in view of the teaching of *Osaki et al., Heikkila and Todoroki et al.*, and to have arrived at the invention of claim 1.

The suggestion/motivation for doing so would have been that, as already noted, relative rotation between the sample and the microwave source, as well as a transmission mode of testing, are both widely used in the art. Indeed, the Applicants' own admitted prior art (Fig. 1) includes the former feature as being well known in the art.

Therefore, claim 1 is obvious and unpatentable over *King*, in view of *Osaki et al., Heikkila and Todoroki et al.*

Regarding claim 2, this independent claim recites essentially the same structural elements as in claim 1, but a plurality of resonators is used, rather than sample rotation, to determine orientation. *King* discloses an operational mode involving a plurality of resonators (Fig. 7).

Regarding claim 3, this independent claim recites essentially the same elements as in claims 1 and 2, but the plurality of microwave generators and detectors are driven sequentially. As already noted, *King* discloses a plurality of resonators arranged at different locations (Fig. 7). Driving these sequentially, according to a preselected protocol, is an obvious and unpatentable

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engineering design variation. *King* specifically notes that several obvious variations to the specific configurations disclosed, including the multiple resonator configuration in Fig. 7, are possible (column 15, lines 7 ff). Moreover, the use of switches and shift registers to sample a series of sensors sequentially is a commonly used technique in the semiconductor arts.

Regarding claims 4 and 5, since *King* discloses a data processing unit (Fig. 1), specific **functions** that can be performed by this unit do not constitute additional limitations. It should be emphasized that “apparatus claims must be structurally distinguishable from the prior art.” MPEP 2114. In *In re Danly*, 263 F. 2d 844, 847, 120 USPQ 528, 531 (CCPA 1959) it was held that apparatus claims must be distinguished from prior art in terms of **structure** rather than **function**. In *Hewlett-Packard Co v Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), the court held that: “Apparatus claims cover what a device is, not what it **does**.” (emphasis in original). That is, in an **apparatus** claim, if a prior art structure discloses all of the **structural elements** in the claim, as well as their relative juxtaposition, then it reads on the claim, regardless of whether or not the **function** for which the prior art structure was intended is the same as that of the claimed invention.

Regarding claims 6 and 7, *Heikkila* discloses (Figs. 2 and 3) oppositely arranged elements to detect transmission energy (Fig. 2), as well as sensor arrangements for detecting reflection energy (Fig. 3).

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Regarding claims 8-12, *King* discloses (column 15, lines 7 ff) that various shapes (lines 14-15) of the resonator are possible, as are various orientations (lines 16-18) and types of shielding (lines 19-22).

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

*Baum et al.* discloses an apparatus for measuring fiber orientation.

*Lewis* discloses an apparatus utilizing multiple resonant modes of microwave energy for determining fiber characteristics in thin films.


*Varpula et al.* discloses an apparatus for determining fiber orientation.

6. Any inquiry concerning this communication should be directed to Dr. T. R. (Joe) Sundaram at telephone number (703) 306-6821. If attempts to reach the Examiner by phone are unsuccessful, the Examiner's supervisor, Safet Metjahic, can be reached at (703) 308-1436.

T. R. S. ———

TRS

October 20, 2000

  
Safet Metjahic  
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